



# **FOREIGN COMPARATIVE TESTING (FCT) PROGRAM BRIEFING TO NDIA**

---

## **TESTING COTS AND NDI**

---

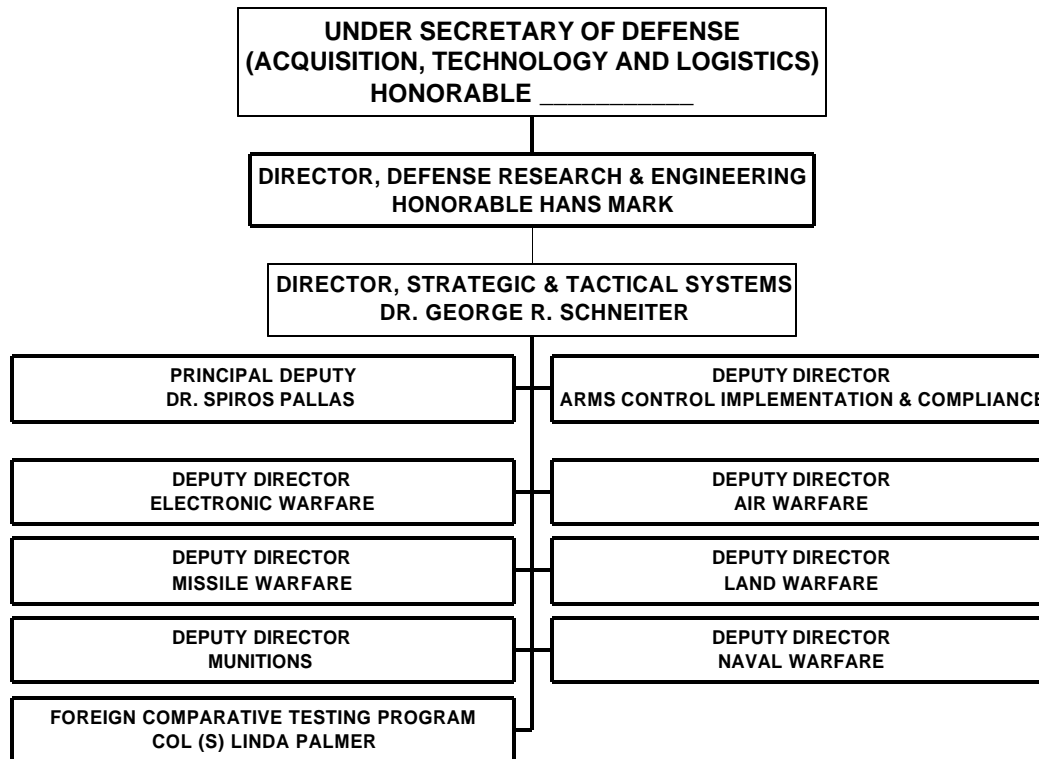
**Col (S) Linda Palmer, USAF  
Program Manager**

**e-mail: [Linda.Palmer@osd.mil](mailto:Linda.Palmer@osd.mil)  
HOMEPAGE <http://www.acq.osd.mil/sts/fct>**

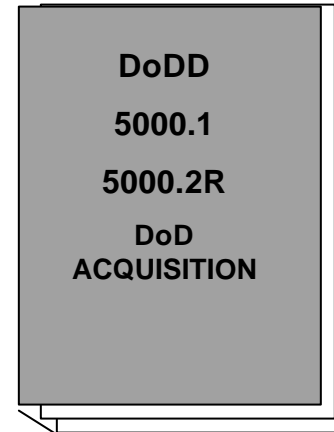
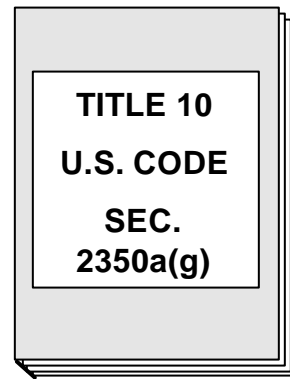
# PURPOSE OF FCT PROGRAM

**Test and Evaluation  
of  
Foreign Non-Developmental  
Equipment that  
Demonstrates Potential  
to  
Satisfy Sponsor Requirements**

# FCT ORGANIZATION IN OSD



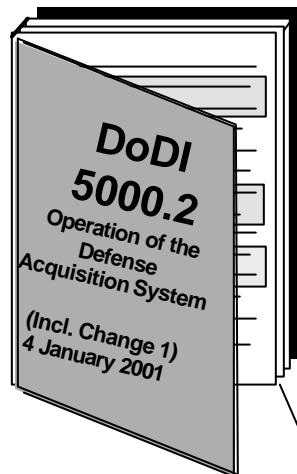
# FCT AUTHORITY AND POLICY



- **CONGRESSIONALLY AUTHORIZED PROGRAM**
- **CONSISTENT WITH DOD ACQUISITION GUIDANCE**
- **KEY OBJECTIVES**
  - **IMPROVE WARFIGHTING CAPABILITY**
  - **ACCELERATE FIELDING**
  - **SAVE TAXPAYER FUNDS**

# FCT FITS

## U.S. ACQUISITION GUIDANCE



### 4.7.3. -- Systems Acquisition

#### 4.7.3.1. -- General

**4.7.3.1.1.** Systems acquisition is the process of developing concepts into producible and deployable products that provide capability to the user. The concept ..... PM's representative may participate in the analysis).

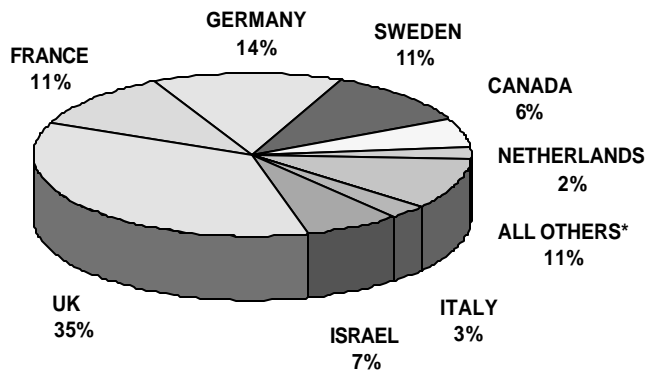
**4.7.3.1.2.** The goal is to develop the best overall value solution ..... If existing U.S. military systems or other on-hand materiel cannot be economically used or modified ... decision-makers shall follow the following ***hierarchy of alternatives*** the procurement (including modification) of commercially available domestic or international technologies, systems or equipment, or the additional production (including modification) of previously-developed U.S. military systems or equipment, or Allied systems or equipment; cooperative development program with one or more Allied nations..... components or systems.

### **ALLIED SYSTEMS OR EQUIPMENT.**

**4.7.3.1.3.** The use of Allied systems and equipment is a preferred source of meeting user requirements. DoD places great weight on interoperability of equipment with Allied governments and coalition partners and on Allied participation in DoD acquisition programs through cooperative development and production and through sales of U.S. equipment. ....

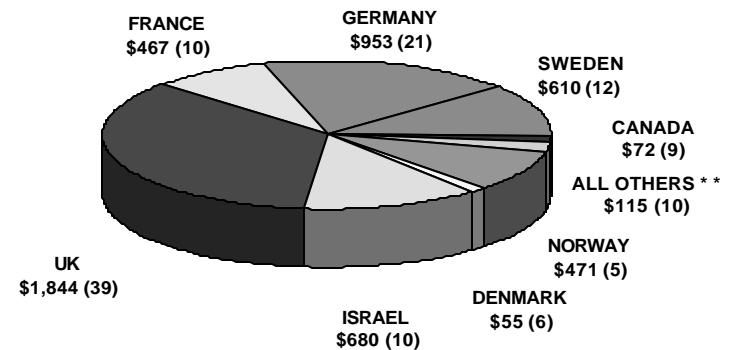
# FCT PARTICIPATION BY COUNTRY (FY 1980 - 2001)

CONSTANT FY01 DOLLARS



**OSD FCT FUNDING PROVIDED  
(% BY COUNTRY \$765M)**

\* Others -- Australia, Austria, Belgium, Finland, Italy, Japan, Netherlands, Russian Federation, Republic Of South Africa, Republic Of Korea, Switzerland, Ukraine

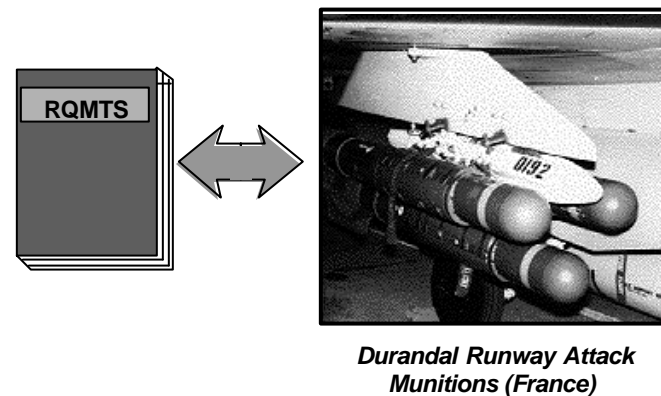
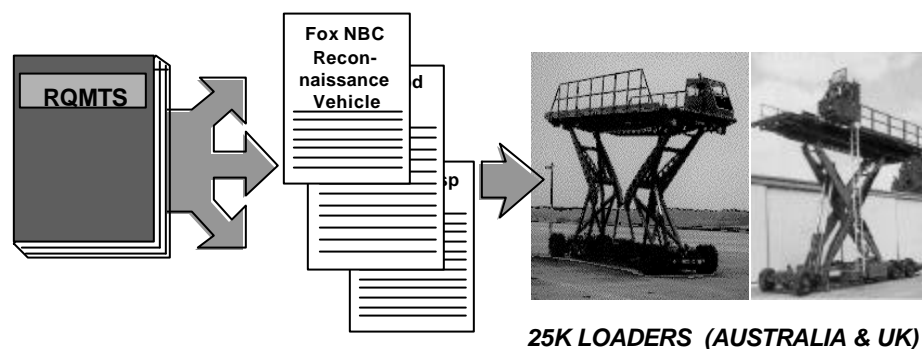


**OVERALL PROCUREMENTS \$5.3B**

\*\* Others – Australia, Belgium, Italy, Japan, Russian Federation, Republic of South Africa, Switzerland

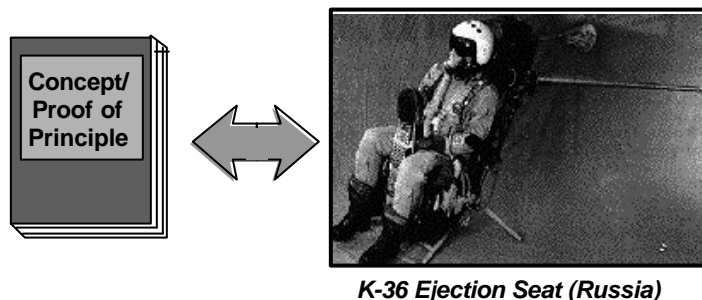
# CATEGORIES OF FCT PROJECTS

## TEST TO PROCURE - HIGHEST PRIORITY



## COMPARATIVE TEST

## QUALIFICATION TEST



## TECHNICAL ASSESSMENT (NO INTENT TO PURCHASE - LOWEST PRIORITY)

# FCT TEST EXECUTION



*84MM Carl Gustaf M3 RAAWS (Sweden)*

**SPONSORS (ARMY, NAVY, MARINES,  
AIR FORCE, USSOCOM)  
PLAN AND CONDUCT THE TESTING**



# WHY TEST ANYWAY?

- DEMONSTRATE PERFORMANCE
- REDUCE PROGRAM RISK
- DETERMINE IF SYSTEM EFFECTIVE & SUITABLE
- IDENTIFY & RESOLVE DEFICIENCIES AS EARLY AS POSSIBLE
- IDENTIFY & RESOLVE MAINTAINABILITY, RELIABILITY, LOGISTICS ISSUES

# COTS/NDI TEST ISSUES

- EXISTING TEST DATA
- MODIFICATIONS TO  
HARDWARE/SOFTWARE
- SYSTEMS APPROACH
- MODELING & SIMULATION
- U.S.-SPECIFIC REQUIREMENTS

**SHOULDN'T WE HAVE A DIFFERENT  
APPROACH TO TESTING COTS/NDI?**

# EXISTING TEST DATA

- STANDARDIZED TEST PROCEDURES
  - ITOPS & NATO STANAGS – GOOD ENOUGH?
  - DETERMINE ACCEPTANCE OF EXISTING DATA
- NDI IN USE BY FOREIGN MILITARY
  - DATA/INFORMATION EXCHANGE AGREEMENT CAN PROVIDE GOVT-TO-GOVT DATA TRANSFER
  - VENDOR HAS EXPERT KNOWLEDGE OF EXISTING DATA AND CAN GATHER IT FOR OUR REVIEW
  - UNDERSTAND CONDITIONS & LIMITS TESTED

**GOAL: CONSTRUCT A COST-EFFECTIVE  
TEST PLAN FOR NDI**

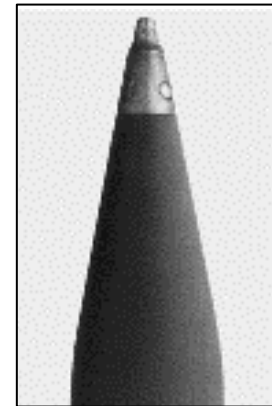
# EXISTING TEST DATA (CONT)

- NATO STANAG SUBGROUP 1 (EXPLOSIVE MATERIALS)
  - STANDARDIZED TESTS FOR QUALIFICATION
  - CENTRAL REPOSITORIES OF DATA
  - “DOCUMENTATION OF TESTS & ACCEPTANCE CRITERIA...TO PERMIT OTHER NATO MEMBERS TO UNDERSTAND AND INTERPRET THE DATA...” (NATO/PfP AOP-7 ED 2)



HMX EXPLOSIVE  
COMPOUND

LESS-SENSITIVE  
RDX EXPLOSIVE  
COMPOUND



# EXISTING TEST DATA (CONT)

GUIDANCE (DOD 5000.2-R, para 5.2.7 COTS Considerations) :

“Using commercial items offers significant opportunities for reduced cycle time, faster insertion of new technology, lower life cycle costs, greater reliability and availability, and support from a more robust industrial base. The keys to success involve thinking and acting as an informed consumer... :

- plan for robust evaluations to assist in fully identifying commercial capabilities, ...and to ensure that the commercial items function as expected when linked to other system components

# EXISTING TEST DATA (CONT)

## GUIDANCE (COTS Considerations, cont):

- focus on mission accomplishment, and match the commercial item to system requirements.
- Develop an appropriate T&E strategy for commercial items to include evaluating potential commercial items in a system test bed, when practical; focusing test beds on high-risk items; and testing commercial-item upgrades for unanticipated side effects in areas such as security, safety, reliability, and performance.”

# EXISTING TEST DATA (CONT)

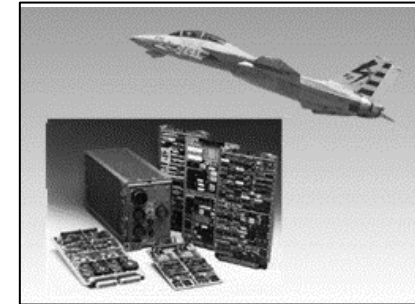
- AF INSTRUCTIONS 99-101 and 99-102 require the testing of COTS/NDI systems in all areas where no previous commercial testing was done (generally the "military unique" areas)
- Section C (ON COTS/NDI): The test approach will be tailored to the type of system, its intended operational use, and the amount of test data already available. Sources of this data include:
  - Contractor test results.
  - Usage data from other military and/or commercial customers.
  - Results from independent test organizations.

# MODIFICATIONS TO HARDWARE/SOFTWARE

- SAME BASIC HW/SW--SAME USE  
⇒ INTERFACE CONTROL IS IMPORTANT

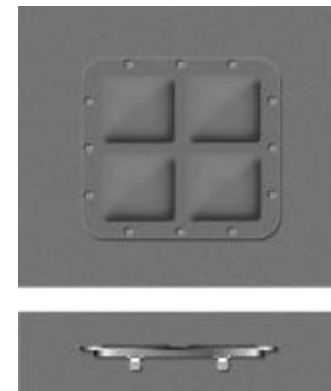
→ F-14 DFCS

- MODIFIED EUROFIGHTER DFCS
- SIMULATOR AT PATUXENT RIVER
- NO AIRCRAFT LOST DUE TO UNCONTROLLABLE FLAT SPIN



F-14 DIGITAL FLIGHT  
CONTROL SYSTEM

- ANTI-JAM GPS ANTENNA
- REPLACES CURRENT ANTENNAS  
ON MULTIPLE AIRCRAFT



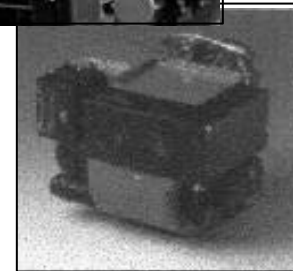


# MODIFICATIONS TO HW/SW (CONT)

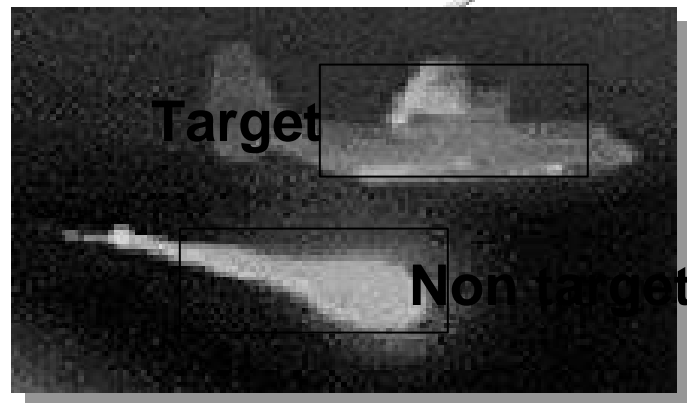
- COTS/NDI HW/SW--NEW USES

⇒ MORE EXTENSIVE TESTING NEEDED FOR THE INTENDED USE

- DEMONSTRATE POTENTIAL
- PHASE TEST & EVALUATION
- INTEGRATION ISSUES



AIRTRONIC LIGHT  
OIL BURNER



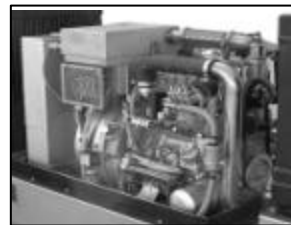
HOLOGRAPHIC NEURAL NET (PROPOSED)

# SYSTEMS APPROACH

- COMPONENT-LEVEL TESTING

→ ADVANCED AMPHIBIOUS ASSAULT VEHICLE

- ALUMINUM ROADWHEEL (UK)
- LIGHTWEIGHT ALUMINUM TRACK (GERMANY)
- LTWT DIESEL-DRIVEN AUX PWR UNIT (GE)
- COMBAT TROOP SEAT (SWEDEN)
- HYDRAULIC PUMP (GERMANY)
- 30MM ARMOR-PIERCING FIN-STABILIZED  
DISCARDING SABOT-TRACER  
(APFSDS-T; GERMANY, NORWAY)



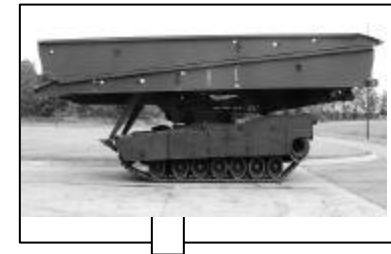
# SYSTEMS APPROACH

- SYSTEM-LEVEL TESTING

→ FOX NBC RECONNAISSANCE VEHICLE



→ WOLVERINE BRIDGE-LAYING VEHICLE



→ MINE-PROTECTED CLEARANCE VEHICLE



→ RUBBER DUCK DECOY



# MODELING & SIMULATION

- AUGMENT FIELD/FLIGHT TEST

→ C-17 FLARE EVALUATION

- WAVEFORM ANALYSIS OF  
FLARE VS. SEEKER



- FOCUS FIELD/FLIGHT TEST

- PARE DOWN TEST MATRIX
- TEST WHAT YOU NEED TO TEST

- REHEARSE THE TEST



ADVANCED FIBER-OPTIC HMD

# MODELING & SIMULATION (CONT)

- TRAINING



F-14 SIMULATOR WITH ANALOG AND DIGITAL FCS

# MODELING & SIMULATION (CONT)

- SAFETY ASSURANCE

→ HARDWARE-IN-THE-LOOP IN SIMULATORS

→ EXPLOSIVES (from NATO/PfP AOP-7 Ed 2)

- “The use of modeling to assess the behavior of explosive materials under a wide range of stimuli and scenarios is important.” (AC/310 Subgroup 1)

# U.S.-SPECIFIC REQUIREMENTS

- WEAPON SYSTEM EXPLOSIVES SAFETY RVW BD AND INSENSITIVE MUNITIONS REVIEW



HELLFIRE MISSILE

M-72 LIGHT ANTI-ARMOR  
WEAPON (LAW)



CARL GUSTAV



GIANT INFRARED DECOY

- TYPE CLASSIFICATION
  - ARMY REGULATION 70-1 CHAPTER 5 AND DA PAMPHLET 70-3

# U.S.-SPECIFIC RQMTS (CONT)

- FLIGHT SAFETY/STORES CLEARANCE
  - MANY ALLIES NOW TEST TO STANDARDS SUCH AS SEEK EAGLE



HAVE NAP STAND-OFF  
WEAPON (AGM-72)



PYLON INTEGRATED  
DISPENSER SYSTEM

- FDA APPROVAL



SKIN/OPEN WOUND  
DECONTAMINATION LOTION



# U.S.-SPECIFIC RQMTS (CONT)

- OSHA RULES, ENVIRONMENTAL REGS, CONGRESSIONAL RQMTS
- SAFETY & HUMAN FACTORS

SUBMARINE ESCAPE  
& IMMERSION EQPMT



LIGHTWEIGHT CHEMICAL  
DETECTOR



MAN-PORTABLE  
MULTI-SENSOR SYSTEM



SUBMARINE  
BERTHING POD



# **U.S.-SPECIFIC RQMTS (CONT)**

## **MUNITIONS CONCERNS**

- **MODIFIED NDI ITEMS**
  - **COMMERCIAL QUALIFICATION DATA INSUFFICIENT**
- **ITEMS IN ALLIED MILITARY INVENTORY MAY NOT MEET U.S. REGULATIONS (INSENSITIVE MUNITIONS, ENVIRONMENTAL, TOXICITY)**

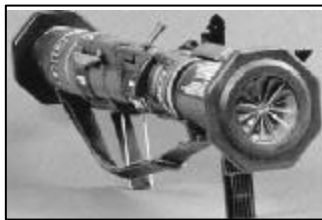
## **U.S.-SPECIFIC RQMTS (CONT) MUNITIONS CONCERNS**

- STILL SAVE 3-4 YEARS OF R&D--MOVE DIRECTLY INTO ENGINEERING & MANUFACTURING DEV PHASE
- “STILL A VERY GOOD STORY RESULTING IN SAVINGS OF MILLIONS OF DOLLARS WHILE PROVIDING THE USER WITH THE LATEST AND GREATEST TECHNOLOGY.”

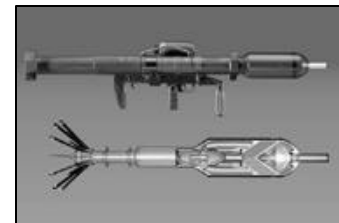
Peter Errante, PM-SMALL ARMS, PICATINNY ARSENAL

# HOW CAN WE IMPROVE?

- THERE'S NO SINGLE ANSWER
  - INVOLVE DEVELOPMENT AND OPERATIONAL TEST EXPERTS, AND CERTIFICATION AUTHORITIES, EARLY AND OFTEN--INCLUDE AS PART OF THE INTEGRATED PRODUCT TEAM (IPT)
  - COORDINATE WITH MILESTONE DECISION AUTHORITY
  - REVIEW QUALITY OF EXISTING DATA
  - INTERVIEW CURRENT USERS, ASSESS PERFORMANCE
  - WE CANNOT COMPROMISE SAFETY



AT4-CS

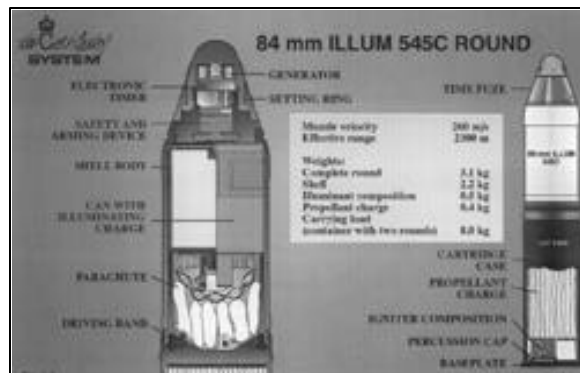


BUNKERFAUST

BUT WE SHOULD IMPROVE OUR TEST PROCESS

# HOW CAN WE IMPROVE?

- NEW EFFORT UNDER CONTRACT
  - EXAMINE EXISTING TEST DATA ON A TYPICAL AMMUNITION PROJECT: **MULTI-ROLE ANTI-ARMOR ANTI-PERSONNEL WEAPON SYSTEM (MAAWS) INFRARED ILLUMINATION ROUND**
  - ASSESS PERTINENT DATA
  - IDENTIFY OPPORTUNITIES FOR SAVINGS
  - HELP STRUCTURE A COST-EFFECTIVE TEST PLAN



**STAY TUNED**

# HOW TO CONTACT THE FCT OFFICE

**OSD -** Colonel (S) Palmer, USAF (703) 602-3740,  
Fax (703) 602-3748  
Linda.Palmer@osd.mil

**<http://www.acq.osd.mil/sts/fct/>**

**Air Force -** Maj John Ryan, USAF (703) 588-8926/8945

**Army -** Al Trawinski (703) 617-4712/3219

**USN/USMC -** Michael Locke (202) 764-2448;  
Shawn Prablek (703) 784-3578

**USSOCOM -** LTC (P) Tom Spellissy, USA (813) 828-9426